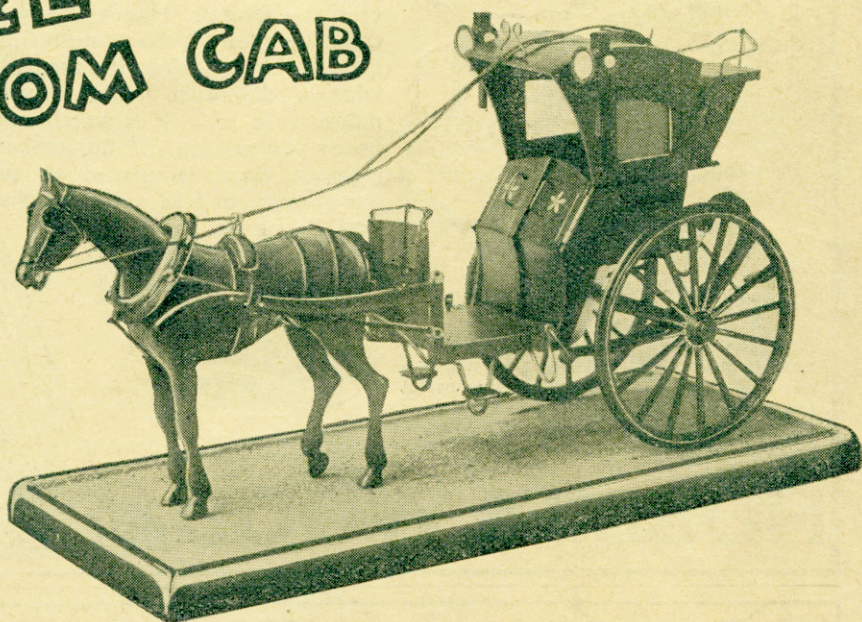


Hobbies

WEEKLY

DESIGN PATTERNS FOR THIS
**MODEL
HANSOM CAB**

ALSO
LARGE
FREE CHART
OF A PHOTO
FRAME



January 22nd. 1938

2^D

Vol. 85. No. 2205

**THE FRETWORKER'S AND
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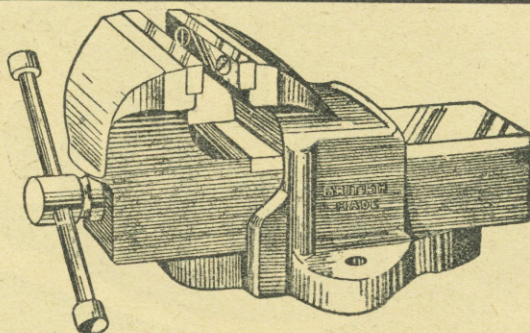
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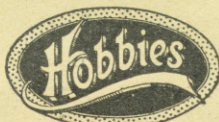
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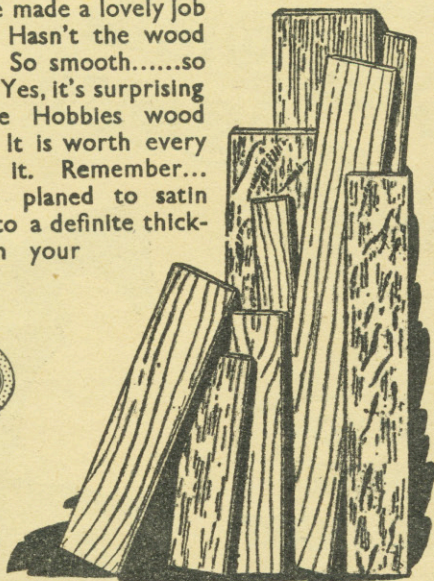
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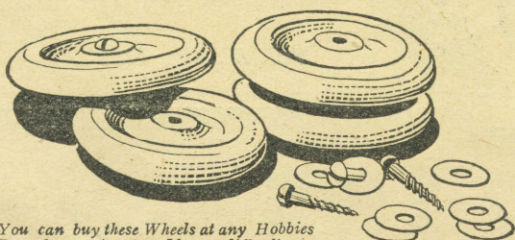


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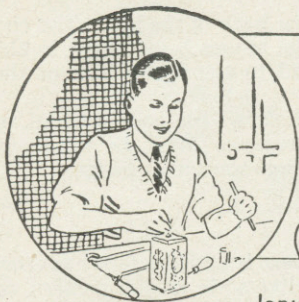
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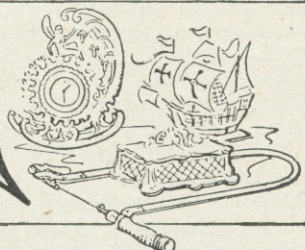
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HOBBIES LIMITED - DEREHAM



Hobbies

WEEKLY



January 22nd. 1938

Vol. 85. No. 2205

LADY'S DRESSING TABLE CASKET

THE gift-design of this week's issue is for a practical piece of work which anyone with a little experience, can cut out with the aid of a fretsaw. Moreover, it is a novelty which is sure to appeal to any lady, and as such, suggests itself as a gift for a birthday or a wedding or a similar occasion.

You may not, perhaps, know now of a likely date, but we would advise your undertaking the piece of work so as to have the article in hand ready for any occasion which is sure to arise.

The box will particularly appeal to a lady because it is compact yet thoroughly useful. When closed it is $15\frac{3}{4}$ ins. long and $4\frac{1}{2}$ ins. deep. It is composed of a three-piece lid as can be seen in the picture.

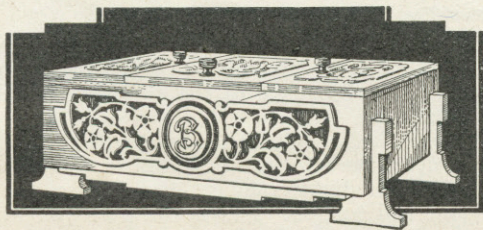
The centre portion opens upwards and is provided with a mirror inside. The two outer portions open sideways over the ends, and are so made that they form little support shelves for cream pots, etc.

The box is suitable to be made up in any ordinary fretwood, but the parcel supplied contains whitewood. Particulars of it are given herewith.

Study the Design

Before starting, notice that one or two parts are given to scale or in part only on the design sheet, and draw these out full size either on the wood itself or on a piece of thin paper which can be pasted down to it.

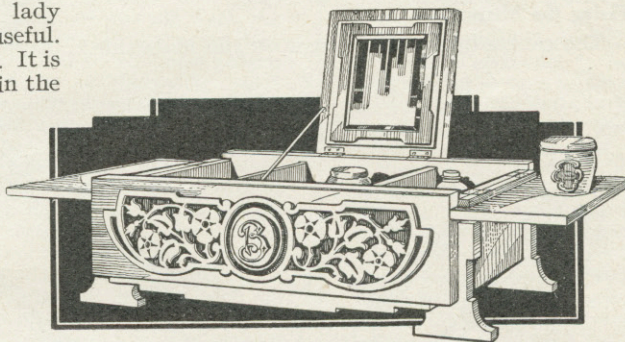
All parts must be cut true and square, particularly those forming the sides of the box.



A view of the box closed

Straight lines must be maintained in order to get a good butt joint. These can be done with the tenon saw if you prefer, and where any two parts are alike, test them up with each other before attempting to put them in place.

That is, you should take the two long sides of the box and stand them together to see they are exactly alike. Then do the same with the ends. Standing all four down on a piece of wood to test that they fit flush along the bottom edge.



Showing the handy side shelves and mirror

If they do not, you will realise that the box will not make a perfect frame, and the alterations must be undertaken before gluing the parts together. For instance, if you have the four upright sides of the box, the floor will not fit between them snugly unless it is cut just the right size.

Get out the four sides of the box first, therefore, and stand them over the actual pattern of the floor. Then cut to the line carefully so the floor itself just slips in between the four sides. It is glued there, and the four sides are glued together also. If you wish, fretnails can be added also, but they should be driven right home and the heads cut off so that nothing can be seen in the finished article.

Lid Strips to Cut

A word should be mentioned about the ends. They are first cut to the outline of the diagram on the pattern sheet, and are, of course, $6\frac{1}{4}$ ins. long.

Then a fine fretsaw is run between the line shown. This will be the full length, and a pencil mark should join up the two broken portions.

The piece which comes off is later glued to the underside of the lid as shown in the detail, and allows for that portion to be hinged outwards and serve as a shelf.

The whole lid of the box, as has been mentioned, is in three pieces, and here again we must see that the parts fit together nicely to form a complete whole. The centre lid is 5½ins. wide and 6¾ins. from back to front—a plain rectangle.

On each side of it comes a narrower lid 3¾ins. wide, and, of course, the same length from back to front—6¾ins. Cut these three pieces true, then lay them on the framework of the box to ensure their outer edge is correct all round.

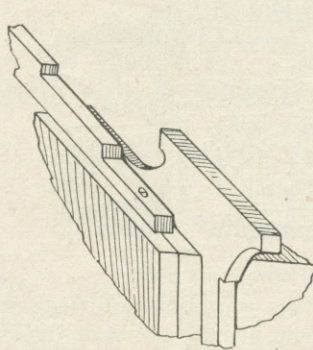
The Hinge Strips

Now you will see how the narrow strip cut off the ends can be glued to the underside of the outer and smaller lid portions.

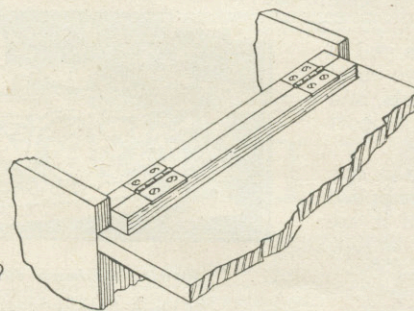
Glue these strips in place right away. To the outside of each of these three lids is glued an overlay, which is cut and glued in the centre of each portion. They are, of course, taken from 1/16in. wood, strengthened up with another piece during the cutting. To each lid also is screwed a knob.

Fixing the Mirror

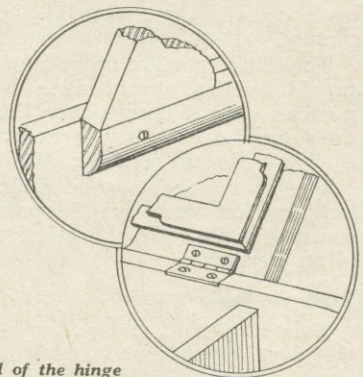
The centre lid has its mirror on the underside.



An under-view of foot and long rail



How the side lids are hinged



A detail of the hinge and strip holding the lid

This piece of glass is supplied, and is put in a frame of four border strips of 1/16in. wood. These in turn are overlapped by an upper overlay cut from ¼in. wood.

When glued in place over the mirror, the whole thing is firmly held to the underside of the lid. This portion is hinged at the back and to prevent it falling outwards too far, a support fillet is provided.

This is cut from ¼in. wood to the shape shown, and it will be necessary to plane the upper edge at a slight angle to allow the lid to fall back slightly. A detail of this is given herewith.

The hinges are fitted to the inside of the lid, and

to the upper edge of the back of the box. The end lids open outwards, the hinges being fitted to the strip under the lid and to the upper edge of the end of the box itself.

Here, again, a detail shows the position, and, of course, in all cases recesses must be made to allow for the thickness of the metal flanges.

Fancy Overlay

To the front of the box is added a fancy overlay incorporating the similar style as the pattern on the top, which has the conventional rose in designing. Notice that from the centre of this front overlay a separate circle of wood is cut.

The large overlay when cleaned up is glued in place on the front, then this separate circle of wood is glued in the opening provided exactly in the same position as it is shown on the design.

MATERIAL REQUIRED

Fretwood.—For making this design, we supply a parcel of selected Whitewood, 4/-, post free 4/6.

Fittings.—3 No. 26 Knobs, 3 pairs ¼in. Brass Hinges, 1 Mirror (No. 5725) and sufficient linen cloth, 1/11, post free 2/3.

A complete parcel of wood and fittings sent post paid 6/6.

Above it comes a further circle of wood, but slightly smaller. This forms the base for the addition of any initial which you wish to add, and if you cannot draw one out for yourself, we shall be happy to supply it full size ready to cut out in

fancy material like ivory, bakelite, xylonite, or if you prefer, in metal like brass, silver or aluminium.

Corner Feet Strips

The whole box is raised on four little corner feet. They are cut from ¾in. wood to give stability, are glued in the rightangle of the ends ¼in. inwards from the sides.

See they bed snugly to the box, and that when all are fitted the whole thing stands firmly on these feet. Further slight ornamentation is provided by the long rail portion. This is cut from ¼in. wood and is glued under the floor and close up to the feet.

MODEL HANSOM CAB

THERE is something misty and romantic about the Hansom cabs which used to run the cobbled, dimly-lit streets and highways of London in "ye good olde days." Although our model does not date back to the original, it is none the less interesting for, as perfume and melody strikes a chord on one's memory, these old cabs recall the fun, glamour, hate, sadness, love and gaiety of life, stage and oldtime song.

It was, of course, J. A. Hansom, an architect hailing from Yorkshire, who invented and patented the cab (known as "Hansom's Patent Safety") in 1834—just 104 years ago. Compared with the model illustrated, which is a replica of a privately-owned cab of the year 1900, earlier cabs were extremely crude vehicles, with enormous, iron-shod wheels and poor springing.

How the ladies, on their way to the music-halls, must have found it awkward as their wide-flowing skirts brushed the mud of these wheels as they entered the bleak regions of the carriage! As the years drifted by, however, there were improvements and changes for the better in the design and general make-up of the cab.

An Exhibition Piece

In designing the cab, we strived at simplicity, and yet, a realistically-constructed model. It should be popular, for every detail has been considered and made quite plain. If well made and finished, the horse and cab—as the photographs of the actual model prove—makes an excellent exhibition piece and should win you a few "hansom" prizes, not to mention praise and credit.

This week's centre page spread contains full-size patterns of the various parts of the cab only. In respect to the horse, a supplementary design



Full-size patterns
on pages 420 and 421

sheet, giving full-size patterns of same and extra details of the harness, etc., is obtainable from the Editor for 3d., post free.

Meanwhile, you can go ahead with the carriage work and have it ready for the horse. In this connection, study the centre page design carefully. Many patterns are, of necessity, printed on top of others and, in some cases, require to be repeated. The most of them need to be cut from 1/16in. plywood, whilst others are cut from 1/4in., 3/16in., 1/8in., and 1/32in. material—so watch your step!

Assembly of Bodywork

The first part to be assembled is the bodywork of the cab. For convenience, we only give one cab side which is connected to a repeat side with a dovetailed strip. Having fitted the strip, the "well" strips are folded as seen by the dotted lines. This is done by scoring *both* sides with a penknife, the *interior* lines being slightly V-grooved to permit folding.

As you are working with 1/16in. plywood, these grooves and scores should be to the depth of the outside layers of wood. The central veneer is thus the only means of keeping the side strips together and acting as a sort of hinge, so work very carefully.

Fit the bunk top between the cab sides and try the roof on top. This roof is best "steamed" to shape, but owing to the grain direction, it can be bent easily to shape with the fingers. The back of the cab is fitted in position. When everything has been assembled, loosen all joints and rub in glue, then close and hold firmly together

MATERIALS SUPPLIED

- 1 piece birch plywood 24ins. by 10ins. by 1/16in. thick.
- 1 piece birch plywood 18ins. by 12ins. by 1/32in. thick.
- 1 piece birch plywood 18ins. by 6ins. by 1/4in. thick.
- 1 piece satin walnut 12ins. by 6ins. by 3/16in. thick.
- 1 piece sheet brass 3ins. by 3ins. by 1/16in. thick.
- 1 piece satin walnut 24ins. by 18ins. by 1/4in. thick.
- 2 lengths No. 37 moulding, 18ins. by 1/4in. groove.
- 1 length 15-gauge brass wire, 24ins. long.
- 1 length 19-gauge brass wire, 24ins. long.
- 1 length 25-gauge wire, 24ins. long.
- 2 plain glasses (No. 5823), 1 1/2ins., by 1in.
- 2 brass hinges 1/2in. long.

with windings of strong thread which is removed after the glue sets.

Shafts and Floor

The floor, shafts and guard is the next consideration. As the guard consists of layers of 3/16in. satin walnut, these can be adhered together as in Fig. 3. The shafts should be tapered to about 1/8in. square at the foremost end then rounded with a penknife and glasspaper. The opposite end must remain square and be fitted as shown. Attach with glue, then affix the brass guard plate on too with 1/4in. long pins (see side elevation at Fig. 1).

When the bodywork has dried, bevel the ends of the floor to suit the oblique of the well or bunk. The bunk top, by the way, should be rasped flush with the well sides and any inaccuracy filled in with plastic wood. Glue and nail the floor in place as seen at Fig. 2.

The combined shaft support and foot-plate rods are bent and hammered flat (as shown by the elevation) from 15-gauge brass wire. Drill and affix these in place with 1/4in. pins.

These pins are simply ordinary pins reduced to length with pincers. To refer to Fig. 5, the

harness lugs (I) and the breeching-hook eyes (H) are shaped (respectively) from 19 and 25-gauge brass wire and fixed as shown.

The Springs and Wheels

The springs should be cut from 1/8in. plywood, including the spoked discs of the wheels. The side rims (you need four) are cut from 1/32in. plywood to the diameter shown. Prior to adhering them to the sides, round the "tyres" of the wheels, then ask someone to hold the delicate work over the edge of the table while you take the *arris* off the spokes with 3/8in. strips of fine glasspaper much in the same way as a boot-boy polishes shoes with a cloth, that is, with both hands.

The hubs and caps are glasspapered and drilled for the axle pins, these being heel brads (almost headless nails about 3/4in. long). The wheels are nailed to the axle which, in turn, is glued to the springs 1/2in. from the axle ends, after which the cap discs are glued over the hubs (see the section on design pages).

The Springs

The constructional view at Fig. 1 shows the spring lugs in position. Shape and flatten these,

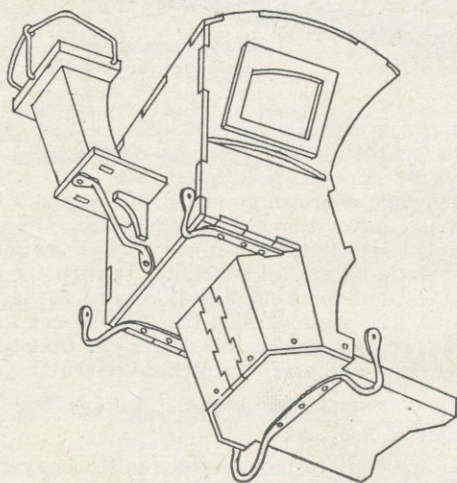


Fig. 2 — Looking upwards from behind, showing construction.

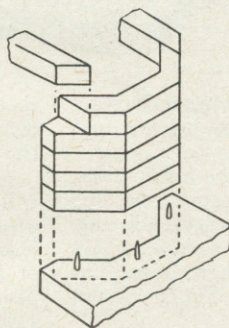


Fig. 3—Guard and Shaft

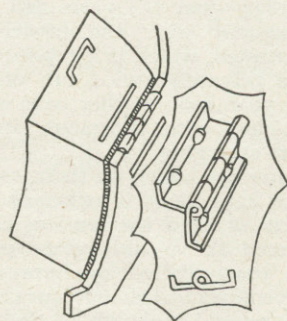


Fig. 4—How to shape the door hinges

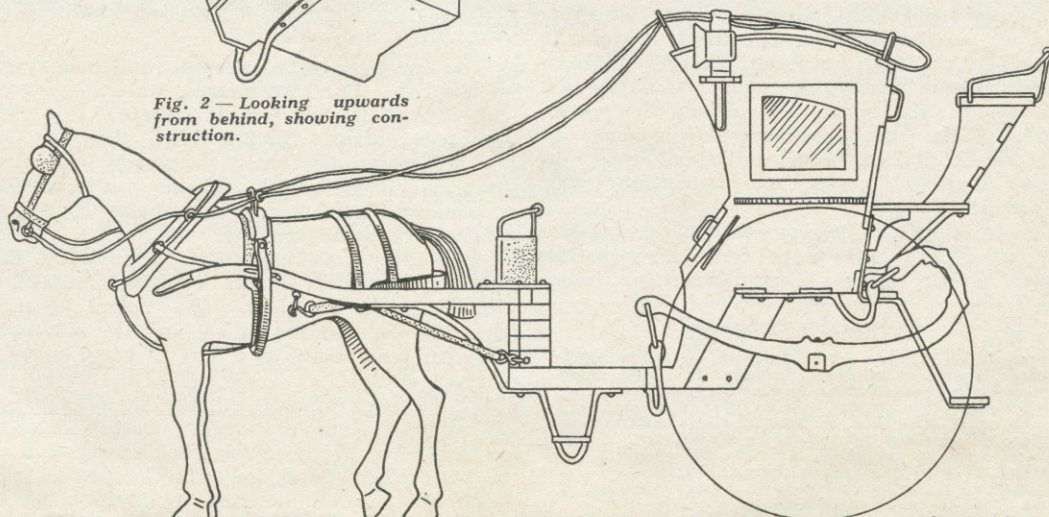


Fig. 1—A side elevation, showing general assembly

including the back step-plate (C, at Fig. 5) and seat support from 15-gauge wire, then drill and attach with shortened pins. The pins for back spring legs should be long enough to turn over inside on top of the bunk.

The Cabby's Seat

Having assembled the cabby's seat and fixed it in place with the wooden and wire support underneath, cover the seat itself with black or dark green leatherette, the railing being bent (from 19-gauge wire) and pushed into holes made in the edge (see Figs. 1 and 2).

The cab doors are grooved and bent and filled with plastic wood as shown by the section on the pattern page. A flange of thin wood is glued to the left-hand door to project halfway. Two $\frac{3}{4}$ in. long brass hinges must be bent to shape as detailed at Fig. 4, the lips being inserted in the kerf-cuts provided in the doors and cab sides. Small handles (E, Fig. 5) are bent from 19-gauge wire and inserted as shown.

Windows and Doors

The window frame overlays are glued over their apertures and the glass fitted in from the inside. The sills can be inserted after the bunk seat and back are glued in place, same being covered with leatherette beforehand.

The trap door parts are glued together (they should be bent slightly prior to this) and adhered over the roof space. The upper shaft guard or shield (A, Fig. 5) is shaped from 19-gauge wire, inserted between the shafts, then covered with a strip of leatherette.

The lamp parts (as can be seen from Fig. 1) are glued up with the rounded (candle) projection in the centre. The face of the lamps are counter-sunk with a rosehead bit, the back of them, of course, being bevelled before gluing in position.

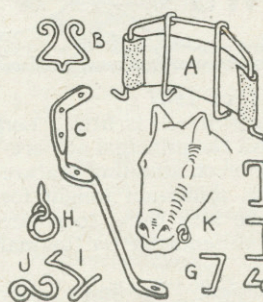


Fig. 5—The various wire fittings

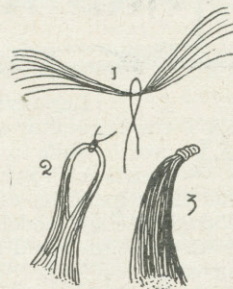


Fig. 6—Stages in making the horse's tail

The work, so far, should be enamelled black. The wheel and rim centres are lined with white, whilst the tyres should be coloured grey to imitate rubber. White ink, by the way, is ideal for lining as you can use a pen. A bottle costs 7d. at any stationer or artists' shop.

This ink is waterproof and requires to be stirred before use owing to the fact that the chemicals used in its manufacture settle into a stiff paste at the bottom after a lapse of time, such as a period of twenty-four hours. Next week we shall give you details of the horse, harness, etc., to complete the work.

(To be Continued)

OVERHAULING YOUR FRETMACHINE

EVERY fretworker should overhaul his machine at least once in the year or, if it is used daily, every six months. Some owners, it is true, cannot be bothered going to this trouble and let the parts wear, squeak and rust until something breaks and the faithful machinery is temporarily out of action.

Keen workers are always attending to their machines, putting a spot of grease or oil there, tensioning a spring or tightening a vital nut here, testing the treadle and flywheel Pitmans, and indeed, seeing to the "health" of their machines as they would their own health. They know that if they didn't get a "taste of oil" now and again, they'd soon be out of action, too.

A Ball-bearing Pitman

The portion that wears quicker than any other part of a fretmachine is the wooden Pitman connecting the frame and flywheel together. It is—like the treadle one—made of hard oak, but the strokes at this point are 600 r.p.m., while the strokes at the treadle are only about 250 r.p.m.

Rather than keep making new Pitmans, it would be advisable to purchase a brass, ball-bearing Pitman—a gift to a faithful servant, so

to speak. Hobbies, Ltd. can supply you with such an article for 3/9 or 3/11 post free. The distance from hole to hole is $3\frac{3}{8}$ ins., this suiting the Gem, A1, etc. You will be surprised at the smooth, quiet-running difference the Pitman makes to your machine.

Other Accessories

Other accessories, such as a dust blower, glass-paper discs, machine side wings, etc., are of further assistance to you if you possess an A1 or Anchor, or Triumph or Imperial machine. The discs and wings cannot be fixed to the Gem machine.

Occasionally, a belt snaps, so a few of these should be in hand to enable you to go ahead. A good temporary substitute can be effected with $\frac{3}{16}$ in. sash cord. Find the correct length and allow an in. extra for binding. Unravel each end $\frac{1}{2}$ in., then entwine them together and saturate with glue before binding with strong wax thread or thin twine.

Another way of making a substitute belt is to wind a length of strong cord around the flywheel and treadle wheel several times, then knot the ends together. Cord, unlike leather, however, sags and tightens according to weather conditions.

NOTES AND NEWS

MODEL AIRCRAFT TOPICS

Landmarks of 1937

AT the beginning of 1938 it seems fitting and worth while to recall the principal achievements of 1937. The outstanding feature was the stipulation of 8oz. minimum weight for Wakefield class models, the idea being to secure greater efficiency and less dependence on thermal currents.

This is revolutionising design. The first victory under the new conditions went to France, and the 1938 Wakefield Cup contest will accordingly be flown in that country.

The Albert Hall meetings resulted in the production of microfilm-covered indoor models weighing a fraction of an ounce. A 'spar' type established a record of 18 minutes 52 seconds, and a fuselage type a record of 3 minutes 47 seconds.

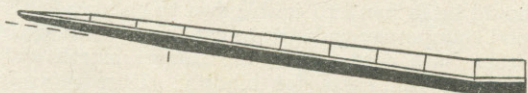
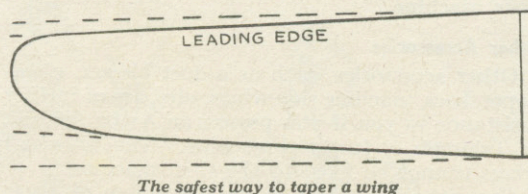
A 'Comet II.' high-wing monoplane with 18cc. 'Comet' two-stroke engine, raised the British petrol-plane record to 16 minutes 25 seconds, starting from North Dorset, and finishing in the sea off the Isle of Wight!

Three very successful flying-boats were produced, two with twin rubber motors, and one with a petrol motor. Soaring flights were obtained for the first time with biplane models.

Wings—Tapered or Constant-Chord?

SINCE one constantly encounters model builders who are uncertain whether to use wings tapered in plan form and thickness, or the type in which the chord remains the same from root to tip, a brief explanation of their respective characteristics may be welcomed.

The constant-chord wing is obviously easier and quicker to produce, as all the ribs are alike.



Showing "washout" (decreased incidence) at wing-tip

It is easy to stabilise, as, if stalling occurs, it begins at the roots, and is therefore less likely to be violent in effect. At the low-speed of models, this type of wing is almost (but not quite!) as efficient as the tapered variety, and is therefore perfectly satisfactory for general-purpose models.

For high-performance models, however, the greater efficiency of the tapered wing justifies the greater complication. The improvement is due chiefly to the fact that tapering transfers lifting-surface from the region of the tips, where there is likely to be fairly considerable loss of lift through the air spilling over the tips, to the centre, where conditions are better. Also to the resultant transference of structural material from tips to centre, where greater stresses are encountered.

[There are numerous ways of tapering, some of which have the unwelcome tendency of stalling first at the tips, or simultaneously over the entire wing.

For high-performance design anything doubtful should be eliminated, and the safest procedure is to use a chord of not less than $3\frac{1}{2}$ ins. near the tips, to keep the minimum chord not less than two-thirds of the maximum chord, and to obtain the taper by sweeping back the leading-edge one-quarter, and bringing the trailing-edge forward three-quarters (see diagram).

Stability is also improved by bending the trailing-edge upwards, one-third from the tips, so as to reduce the angle of incidence at the tips by a small amount. These methods will ensure that any stalling shall begin at the centre.

Wakefield Designs

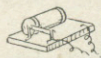
HERE are some further hints on designing for the Wakefield contest. Just as experience showed the high-wing monoplane, with one-piece wing and slab-sided fuselage to be the most suitable type for the light-weight class, so experience with the new weight area formula seems to indicate as the most suitable type for the new conditions the bird-like 'shoulder-wing' monoplane, with each half-wing faired into a circular or oval-section fuselage, and free to tumble out when a blow is encountered. Tapered wings, to the RAF32 wing-section seem the most popular.

The monocoque fuselage, despite its low head-resistance, seems worth while only if the weight can be kept down to that of the more orthodox type, and the simpler multi-sided, paper-covered fuselage seems the best compromise. Tails of lifting section, Clark Y or M.6, though they render the model more sensitive longitudinally, may be justified by the fact that they contribute lift, without breaking the wing-area rule.

Until the retractible undercarriage emerges from the experimental stage, it is best to fit the single-strut type. This offers little resistance, and so saves power and prolongs the glide, but entails a careful choice of bamboo sizes if there is to be sufficient shock-absorbing quality to avoid fuselage damage.

Airman

The AMATEUR



ELECTRICIAN

BATTERY SET FOR LIGHTING & CHARGING

A BATTERY set for running miniature electric lighting through the house and for charging accumulators is easily made at home. It will be found to work well over a long period without very much in the way of attention, if built up as suggested.

Six cells will be required to make up the battery, but as each is identical with the other, instructions for making one is all that is necessary.

Obtain a wide-mouthed 3lb. glass jam-jar, and wash it thoroughly in hot water so that it is quite clean. Get a strip of sheet copper about 1ft. long and 2ins. wide and bend this into an S shape so it will lie on edge in the bottom of the jar.

No Solder

Bare the ends of a length of thick insulated copper wire and secure one end to the strip by means of a copper rivet; solder must on no account

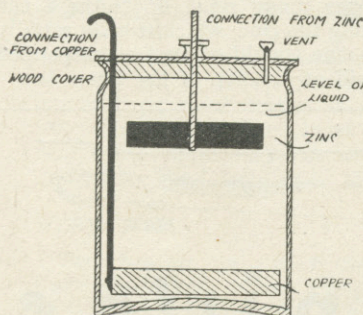


Fig. 1—A section of cell

be used. Fig. 1, shows the fitting up of the jar in section and explains the use of the various components.

A zinc element is now necessary and this must be as massive as possible in order to save renewal. Such an element can be made at home quite easily in the following manner.

Take an old tin lid that is small enough to enter the mouth of the jar and about 1in. deep. After cleaning it well, coat it fairly thickly inside with black-lead mixed to a paste.

The Zinc Element

Pieces of scrap zinc are now placed in an iron ladle, sprinkled with a little powdered resin and melted over a fire. Stirring slowly with a piece of green stick to assist in mixing the particles. Have a 6in. length of brass screwed rod ready and hold this—with a pair of pliers—centrally in the lid. Then pour the melted zinc into the mould.

When set, a perfect zinc element, fitted with connecting rod, will be found. Fit a milled nut to the upper end of the rod and it is ready to insert into the battery jar.

A flanged cover of wood must now be made to seal the mouth of the jar, the best way of making

this is to saw a disc of $\frac{1}{2}$ in. hardwood that will fit tightly into the neck and then to cut a larger disc of fretwood and glue it centrally over the first; driving a few small pins through to add to security. Melt some paraffin wax—old candle ends will answer admirably—and steep the lid in it for an hour or so, keeping the wax melted during this time.

Vent Holes

It will be seen from Fig. 1 that it is necessary to drill three holes in the cover, which is best done before waxing. Two holes are for the contacts from the metal elements and the third a vent hole for the escape of gases generated in the battery.

This vent hole is equipped in a special manner in order that while the gases may escape easily, the outer air cannot enter. This is how it is done. A short length of glass tubing, about $\frac{1}{4}$ in. in diameter, is heated at one end and expanded to a thistle-head by revolving a blunt-pointed metal end in it while soft.

Push the tube through the hole in the cover, smear the inside of the little funnel with vaseline and drop in a steel cycle ball of suitable size. You now have a very efficient release valve which works in one direction only.

To Prevent Creeping

Now smear the inside of the jar with vaseline down to the level of the liquid and also coat the connecting wires from the elements in the same manner. This prevents the metallic salts from creeping up and gradually reducing the efficiency of the battery.

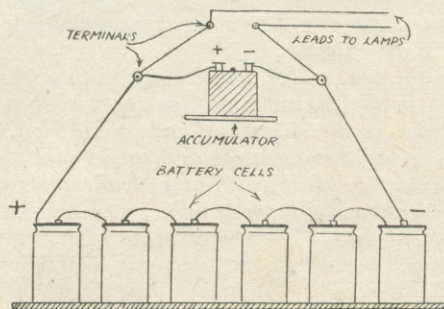


Fig. 2—The connections in diagrammatic form

The cell is now ready for charging; this being done in the following manner. From the chemist buy 2lbs. of clean crystals of sulphate of copper and place these in the bottom of the jar as level as possible. Pour in sufficient distilled, or clean

rain water to bring the level up the neck of the jar as shown at Fig. 1.

Thread the copper element connection through its hole in the cover and then place the cover—with the zinc attached—into place and run melted paraffin wax around the central rod, vent tube and copper connection to seal them. At the same time seal the cover to the jar in the same manner.

Storage

Great care must be taken not to move the jar about more than necessary, or to disturb the sulphate of copper, for if this is done a blue colour spreads up through the water, the battery is already beginning to work and some of its power will be wasted.

Having made up all the cells in this manner, place them on a strong shelf, or on the floor, and above them fit another shelf to accommodate the accumulator as shown at Fig. 2. Wire up as shown in this illustration, taking the zinc lead of one cell to the copper lead of the next, and the positive and negative of the battery to the similar poles of the accumulator.

The Lines

Carry main line wires from two terminals, as shown, to the various parts of the house that are to be lighted and from them run the branch lines to the individual lamps.

It has been found that while lighting may be carried out direct from the battery, a much more effective and smooth flow of current is obtained if an accumulator is always kept in circuit.

This when charged, may be taken out and used for any other purpose—for radio or for a hand-lamp—but another accumulator should at once be put into its place.

In this way, not only is the spare accumulator being charged all the time, but it is also using its beneficial effect on the miniature lighting and at the same time saving wear and tear of the battery system.

Such a battery should last for at least a year and then only requires the renewal of the zinc element and the sulphate of copper liquid in order to put it into perfect working order again.

If lights or charging are not required at any time, an extra length of life may be given by drawing the zinc element up clear from the liquid. The idea of the threaded rod and milled nut was for this purpose, the rod being screwed up and held by turning the milled nut down to rest on the cover.

Give it a Chance

Do not expect the battery to set to work all at once, it will take about a week before it can light at full pressure. During this time of preparation, give it just a little work to do by connecting the output wires each to a small piece of copper sheet and suspend these in a basin of slightly salted water, a few inches apart.

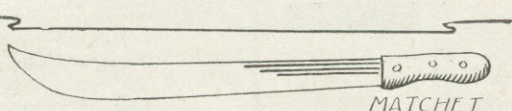
This small amount of resistance gives the battery just sufficient work to prevent the blue sulphate of copper rising right up through the liquid and reaching the zinc, which it will rapidly eat away. The zinc should always be suspended in the clear liquid at the top of the jar.

Tools and their uses

THERE are probably more types of knife for various purposes and trades than any other kind of tool. They range from the boy's pocket knife to razor-like instruments for special jobs and the tools of the surgeon.

On the tea, rubber and banana plantations, in the jungle, in the frozen North, in the workshop and by the forge, in the laboratory and on the high seas, the knife is the one essential and useful tool. A large volume could indeed be filled with the types and uses of the hundreds of types of knife in use today. Skilful use of one or two tools is often an asset, and we can all recall marvels of craftsmanship—carved with the humble pen-knife

All types of knife should be sharpened on a sandpaper block or piece of fine emery cloth, and finished off on a hone or oil stone.

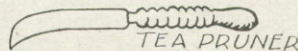


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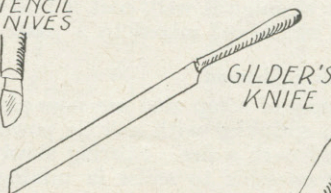
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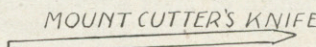
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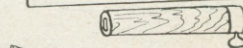
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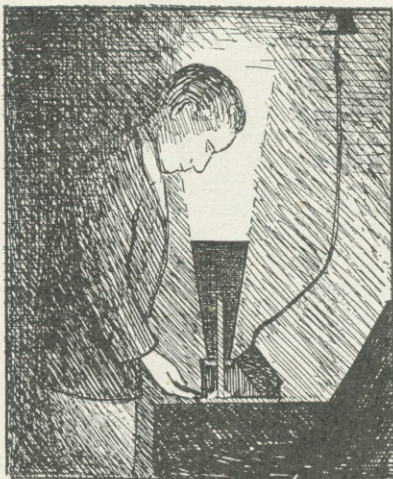
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cheaper the lens the harder it will be to get all-over fine definition, unless you use only a very small part of the middle of the lens. But this, while it gives definition, cuts off a lot of light. What is really required is a lens that will give good definition with a good opening, so that a satisfactory amount of light can be passed at the same time.

Suitable Lens

A lens from a box camera will do quite well, however, but remember the better the lens the better illuminated, sharper and more satisfactory will be the results.

Make a few tests with your lens for 'object' and 'image-distance.' It will be found that the focal length of the box camera lenses do not vary greatly. They will all show a sharp image about a foot away when the object is held approximately 6ins. on the other side. The measurements shown are based on this, but quite an amount of latitude is given as the lens-tube moves up and down, thus allowing for various focal lengths as well as making possible adjustments for fine focussing.

In addition to the lens you will require a sheet of ground-glass 6ins. by 5½ins. Get this from a photographic dealer, as that supplied by ordinary glaziers is rather coarse grained.

HERE is an instrument simple to make, and of great use to many hobbyists. It is a compact self-contained reflectoscope which can be employed for examining in detail stamps, coins, leaves, and indeed, any small object.

The reflectoscope is manipulated in the dark, and as the item in question is placed in position on the baseboard, a greatly enlarged, and well illuminated, reproduction of it appears on the ground glass top, which can be studied at leisure. The advantage of this is, of course, obvious, for now detail quite invisible to the naked eye can be examined, comparative measurements taken that were impossible before, and if desired enlarged tracings can be made.

For Cigarette Cards

Over and above this, small snapshots can be viewed, increased to many times their original dimensions, while the way cigarette card pictures reproduce is particularly good; a set of cards becoming at once a series in many cases of really very nice works of art.

These are but some of the purposes to which this rather remarkable instrument can be put, and various hobbyists will, of course, find ways in which it will help his special interests.

General Details

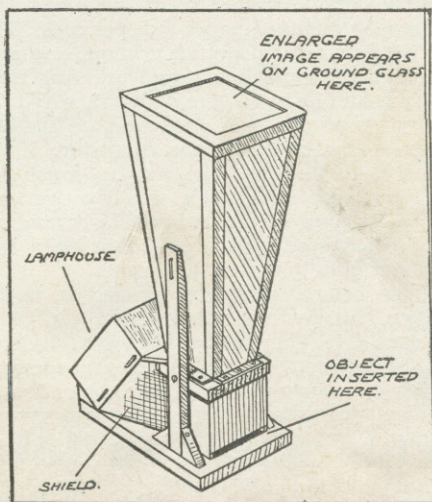
Before starting to build, examine carefully the sketch of the finished instrument, and the working drawings. Essentially, it will be noted, the instrument consists of a truncated box which has ground-glass at one end and a lens at the other, a tube that holds the lens, and is movable for focussing, a lamp-house which throws the light of the bulb on to the object, and finally a base with uprights.

The first thing is to get the lens. This can be an ordinary single double-convex or plano-convex as found in any cheap box-camera—and we can tell you where to obtain it if you cannot get it locally.

Actually a reading glass would do, but the

The Viewing Case

First of all construct the truncated section. This is made of four pieces of thick card as (a), 12ins. long with a ½in. flap at the lower end. They are 6ins. wide at the top and 3ins. at the bottom, and the flap is turned outwards to a rightangle

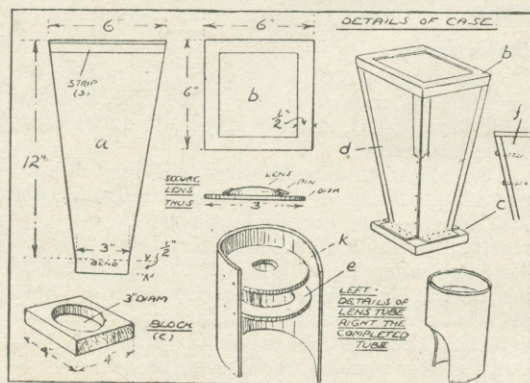


after scoring along the dotted line. At a distance of $\frac{1}{8}$ in. from the top glue the strips (s) of $\frac{3}{16}$ in. by $\frac{1}{4}$ in. wood to hold the ground-glass. Also cut a rectangle of card as (b) to fit on top to give both rigidity to the section and hold the ground-glass in position.

Assembly

Before assembling cut from $\frac{3}{8}$ in. material the block (c) 4 ins. by 4 ins. with a 3 in. diameter circle cut out of the centre to take the lens tube. Cut the side of the circle as truly to right-angles as possible.

We can now put the sides together as (d). The turned-up flaps are glued and held by short tacks. The sides being brought together, a row of short



Detail of case and lens tube

"draper's pins" are pushed in from the overlapping side into the under one, which, of course, is presenting its edge as (f).

If done carefully this will make an amazingly rigid structure when the top rectangle (b) is fitted, as well as by pins pushed through into the walls. Attach the top only, however, with a few pins at the moment, as it will be necessary to take it off again before finally fitting.

Outside and Inside Finish

Finish the outside and inside of the seams with strips of strong gummed paper (3d. per roll). This gives a nice finished appearance without any need of paint, hides the pin heads and prevents them working out, and helps to give added rigidity.

Putting this on one side, next prepare the lens tube. This is 4 ins. high and 3 ins. diameter. If you could find a carton just the size so much the better. If not, cut a rectangle of fairly thin card 4 ins. by 9 ins. and secure it carefully round (k) a disc of thick card 3 ins. diam., having a hole $\frac{3}{8}$ in. diameter cleanly cut in the centre.

Attach as before, with pins pushed in to the disc. Then, 1 in. lower down insert a 3 in. diam. collar of card as (e) $\frac{1}{2}$ in. wide to give added strength. This is also secured with pins run in sideways. Below this cut away the tube as shown, this to

allow the light from the lamp to fall on the object.

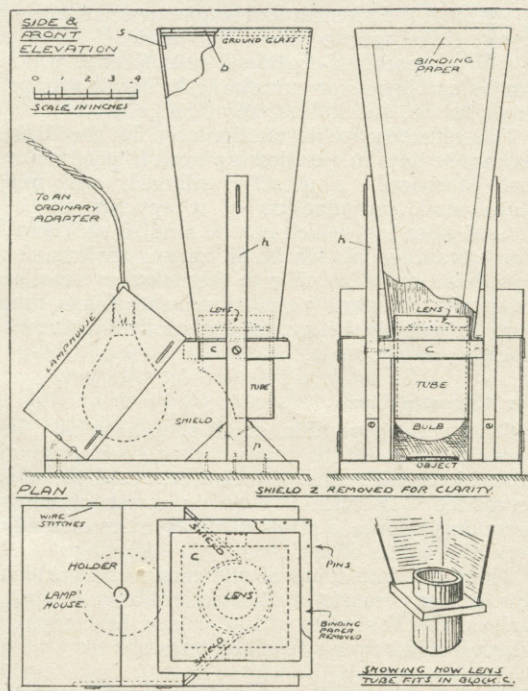
The lens is attached to the card by three drawing pins round the edge which it will be found gives a perfect hold. Paint the inside of the tube a dull black (bought as "drop" black).

Finish the outside of the tube by gluing paper round it, this helps the card to retain its curve and as with the seams gives greater rigidity, also covering the pin heads it prevents any tendency for them to work out. Surround the tube completely to start with, then cut out the part as shown.

When Fitting the Lens

One point here when fitting the lens. If this is a "plano-convex," i.e., one side flat and the other side curved outwards, place the flat side down on the card and the curved side up toward the ground-glass.

Having made the tube, test it with the circle cut out of (c). It should fit nicely, with just sufficient tightness to stay in whatever position it is put. This should be done with great care,



General details showing construction

glasspapering the inside of the circle gently till the required fit is obtained.

The parts given this week are all very important, if the final instrument is to be really efficient, make them, therefore, with some precision, so they will be all in order when the next article appears which will give directions how to make the lamp-house, base and complete the final assembly.

(To be Continued)

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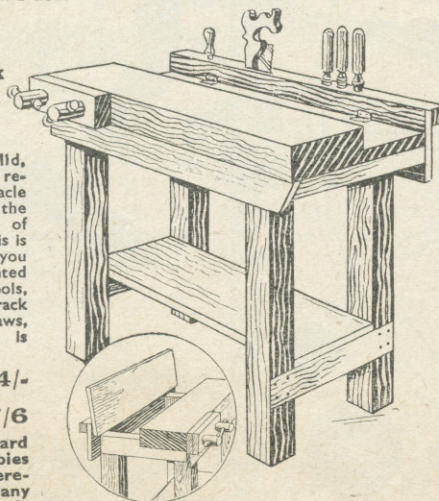
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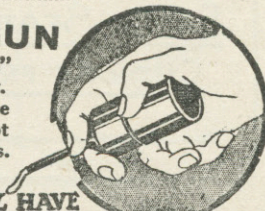
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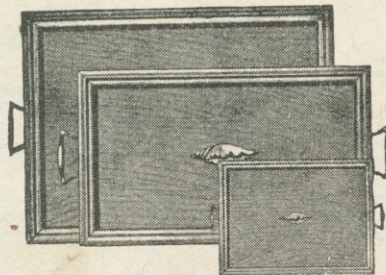
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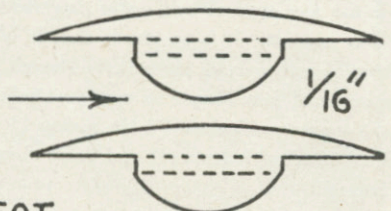
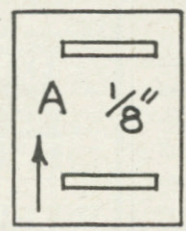
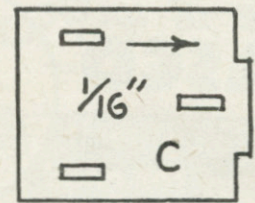
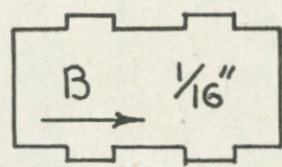
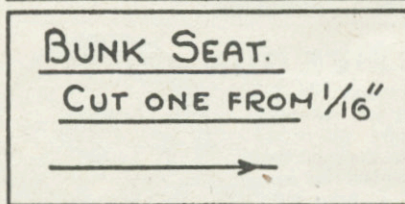
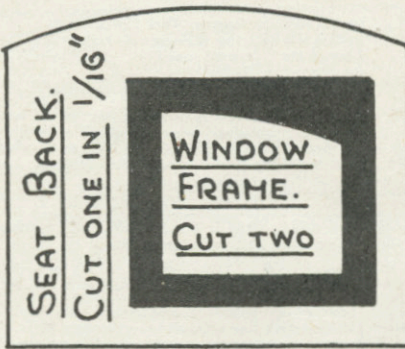
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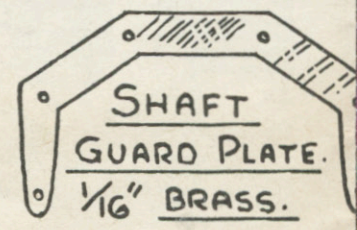
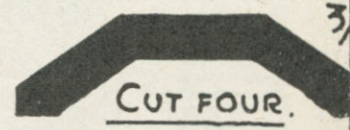
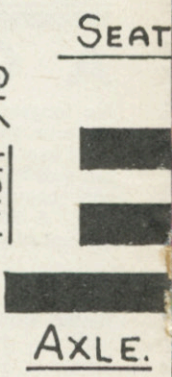
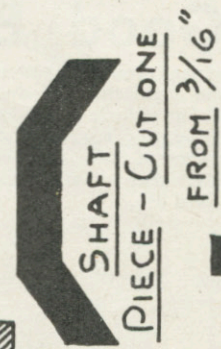
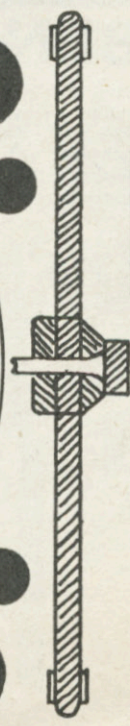
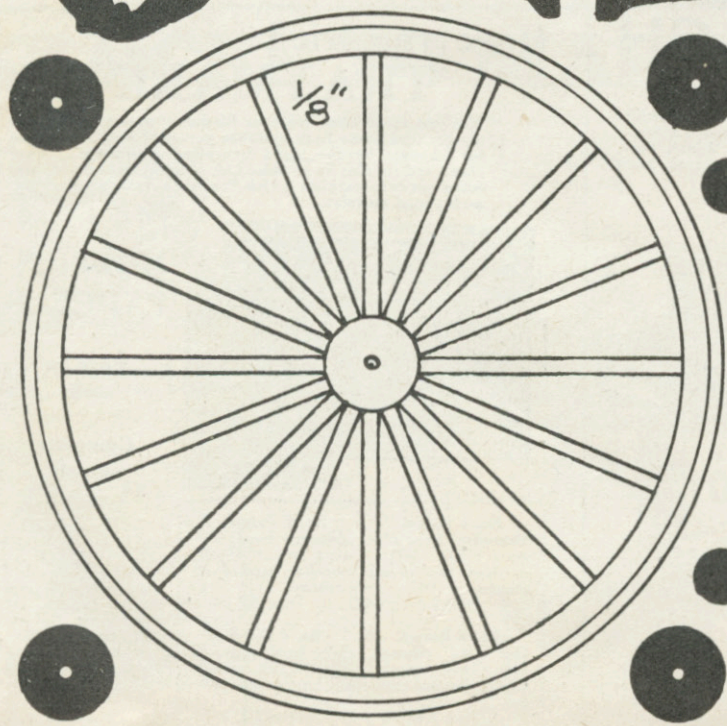
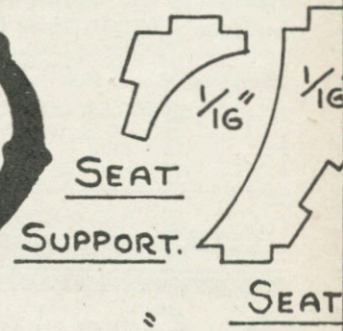
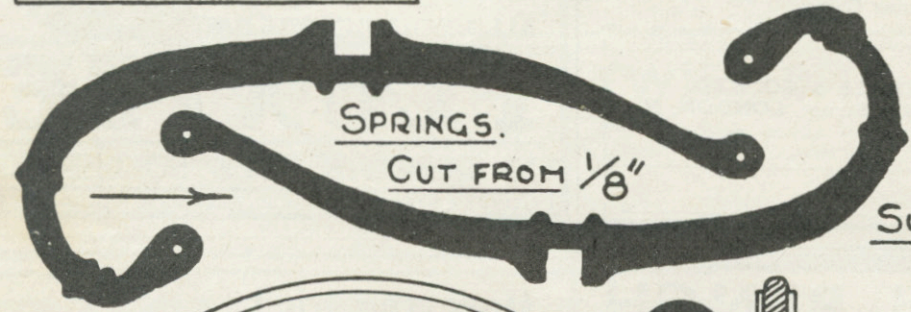
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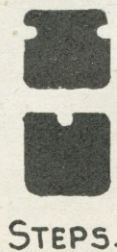
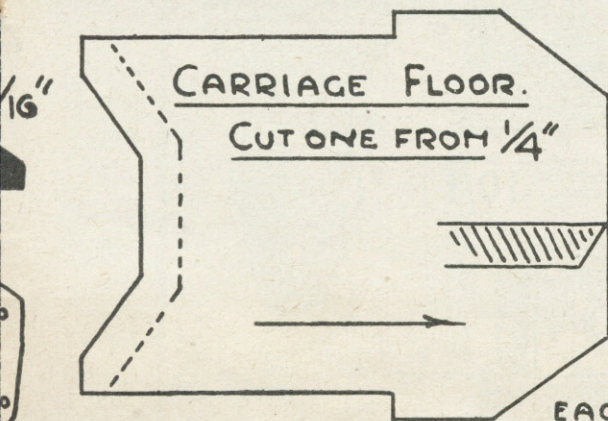
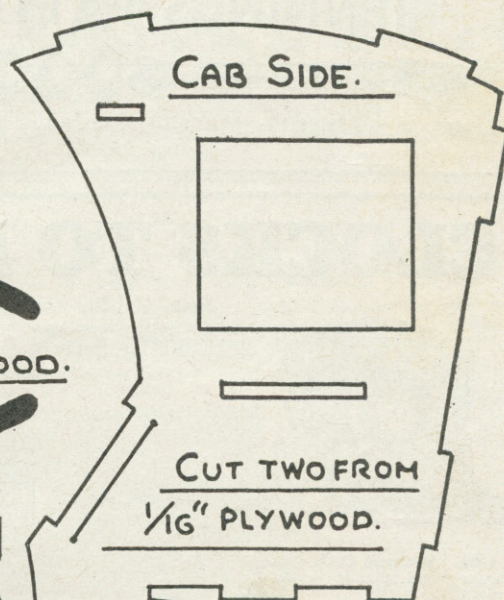
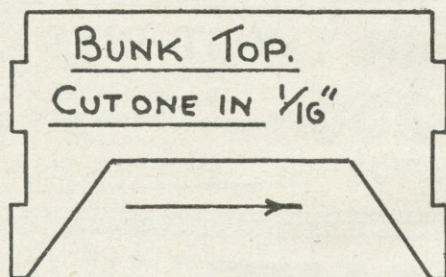
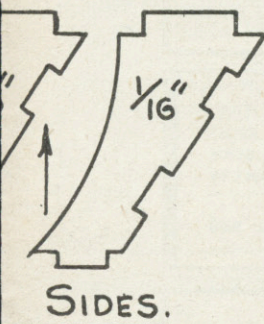
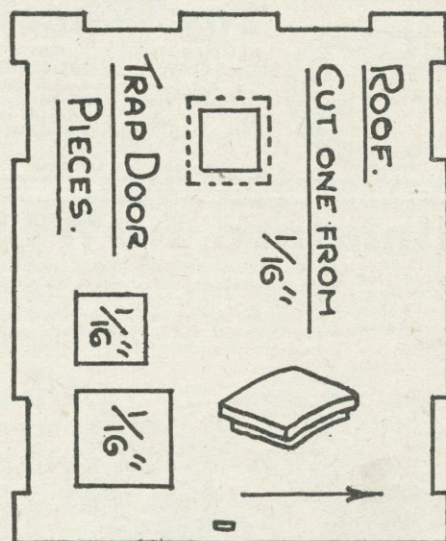
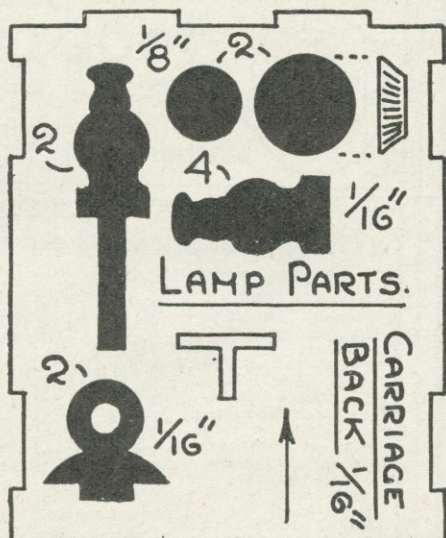
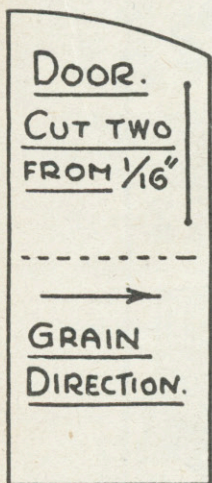
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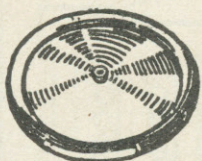
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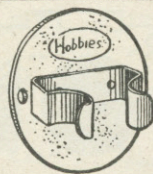
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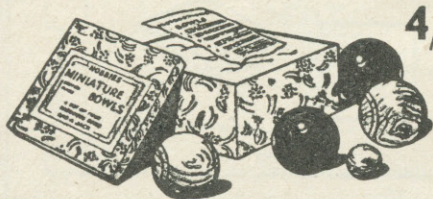
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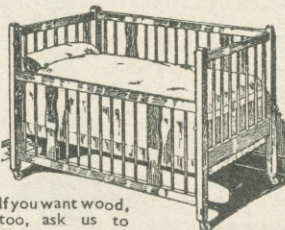
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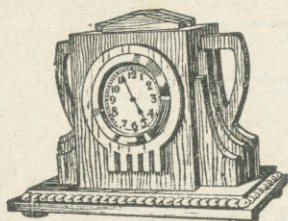
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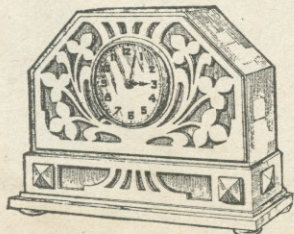
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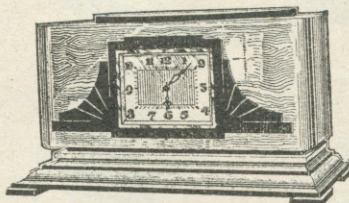


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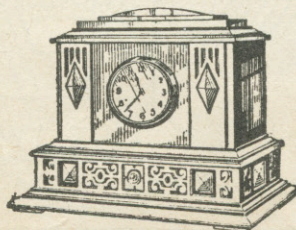
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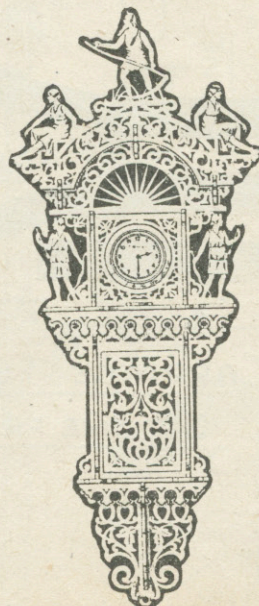
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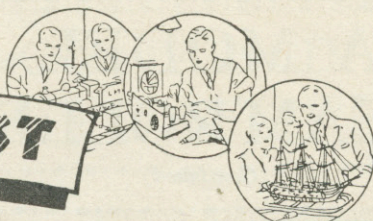


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REPLIES OF INTEREST



Fixing Electric Bulbs

WHAT plaster is used in electric lamps to fix the metal cap to the glass, and also the metal caps on scent sprays?—(W.S.)

A SUITABLE composition for fixing is as follows. Melt 20 parts of resin, under gentle heat, then stir in two parts of plaster of paris, and one part of boiled linseed oil. Apply to the cap and the glass while both are warm, use enough of the cement to completely fill the gaps between the cap and glass.

Clog Making

WHAT tools would I require for clog making?—(S.T.P.)

FOR making clog bottoms you will require a large size bow saw and a cutting gauge, also the usual hard saw and a chisel or two. For price of these consult Hobbies catalogue or for the saw your local tool merchant or any toolmaker's catalogue. Prices vary according to quality. Cut the wood into suitably sized blocks, mark the shape and saw out with the bow saw. The upward curve of the sole and shape of the heel are next cut, also with the bow saw. For the rebate, cut round with the cutting gauge and clean out to a depth of 3/16in. with the chisel. To estimate the size, lay the boat on to a sheet of paper and draw a pencil round. Add 1/4in. to the length, then draw a second outline 5/16in. larger all round, this will be the finished shape. The process of clog making, briefly is as follows. The wooden sole is treated round the edge with lamp black and water. The uppers (already lasted to shape), are tacked to the sole, when dry, with a tack in the centre of the toe and heel first, then a tack each side. If satisfactory for fit, lay a 1/4in. wide strip of wet leather in the rebate to keep out the wet, and nail round the heel with 1in. nails, and with nails of diminishing sizes as the toe is reached. Drive the nails in at a slightly downward angle. Thin brass plates are nailed to the toe and sometimes heel to finish off. You would be well advised to

purchase a pair of finished clogs and study their construction. You will learn more information from them than any brief written description can possibly give.

Wiring a Magneto

I INTEND making a magneto dynamo. I have the magneto complete but with no wiring at all, and I am puzzled how to connect the wire to the slip ring.—(T.L.E.)

CONTACT is made to the slip ring through a brush. This is mounted in the brush holder and must bear lightly on the ring. Make the brush from a piece of soft copper gauze. One end of the armature wire is soldered to the metal of the armature, and the other is soldered to the slip ring. Make this a neat joint so that it will not foul the brush.

Converting a Motor

EXPLAIN to me how to convert an electric motor to a dynamo.—(D.J.F.)

WE have often mentioned in the "Amateur Electrician" how to convert D.C. machines to A.C., but a permanent magnet one cannot be so converted. For use on A.C. the machine must be fitted with wound poles, and if possible, a laminated field. You could run the motor from A.C. through a rectifier and step-down transformer.

Removing Picture Spots

I HAVE a valuable water colour painting. A number of small rusty looking spots have made their appearance dotted here and there about the picture. Can you please tell me if there is any remedy for removing these spots without damaging the picture itself?—(I.C.)

IT is a little awkward to advise on a query like yours without knowing exactly what the nature of the spots is. It may be due to damp, in which case a little spirits of wine and turpentine could be used, but very sparingly, because one has to remember that these things will attack the colours as well, unless the job is done by someone who knows

something about it. Taking everything into consideration, if the picture is really a valuable one, it would be far better to take it to an art shop where probably for the expenditure of a shilling or two, it could be done satisfactorily and safely, than to tinker about with it at home and possibly ruin it.

Finishing Wood White

I WANT to make a miniature grand piano as described in Hobbies, and to finish it white such as the ones I have seen on films and in stage journals, but I am at a loss as to what kind of wood.—(D.F.)

THE whitest wood in commercial use is holly, but this is rather expensive. Sycamore and bird's eye maple are cheaper and are very light in colour. All these woods, however, need to be properly finished off and ordinary french polish should not be used, as this makes them an unattractive yellowy colour. The work must first of all be very carefully cleaned up, and any marks or stains removed with fine glasspaper. If a high polish is required, the work should just be given a rubbing with plaster of paris—applied damp with a pad of rag, and then, when dry, glasspapered down again very lightly. Next a rubbing with wax polish to make the wood non-absorbent, and then successive coats of white polish applied until the required finish has been obtained. White polish is a colourless form of french polish.

Finishing Photographs

PLEASE tell me of any preparation suitable for preserving and which will give a glossy finish to photographs.—(J.F.T.)

THE best preservative to cover the pictures is a clear varnish. This should be of good quality and must be clear. Do not apply it in a cold atmosphere but where the temperature is fairly hot. It can then be put on evenly and if of good quality should not obliterate the actual picture particularly. Make an experiment first, however.

A MODEL STEAMROLLER

(Continued)

IN last week's issue we dealt at length with the major portion of this fine little toy. The frame for holding the front roller was dealt with, so now the roller itself will be discussed. Make it of three wooden discs, each $2\frac{3}{4}$ ins. in diameter. Two will be glued and nailed to a central flat piece "O" (Fig. 1), and one will have a halving cut to fit into a corresponding halving in the centre of piece "O."

These three pieces are glued together, care being taken to get the discs all in proper alignment so the roller will eventually run true when pivoted to the frame.

Fitting the Roller

Around the discs is glued a piece of $1/16$ in. veneer about $4\frac{1}{2}$ ins. by $8\frac{1}{2}$ ins., with a few pins added for additional strength. A piece of $\frac{1}{4}$ in. dowelling will now be inserted through the centre hole in piece K and glued in.

After this the roller can be inserted between the pieces L, long screws being put through these into the end centres of the roller. The holes in L must be made large enough to allow the screws to turn freely.

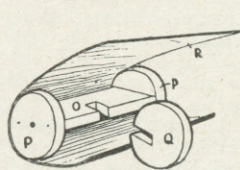


Fig. 1—The front roller

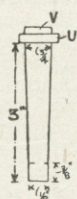


Fig. 2—The smoke stack

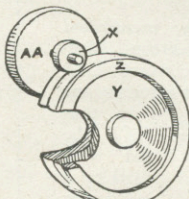


Fig. 3—The driving wheel connections with the road wheel

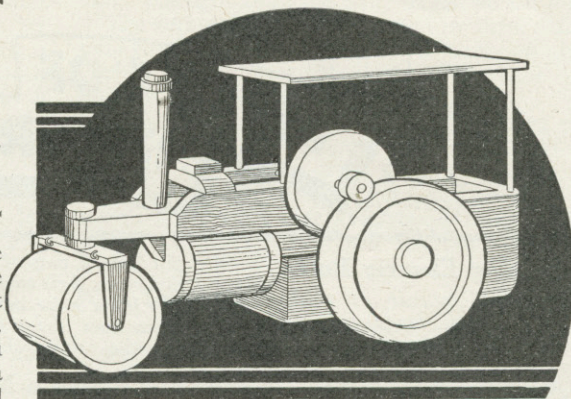
The smoke stack should be the next item to make, and the outline of this is shown in Fig. 2. A piece of $\frac{3}{4}$ in. diam. dowelling 3 ins. long is rasped, filed and glasspapered down to a taper $\frac{1}{2}$ in. at the bottom.

On the top end is glued two discs "U" and "V" both $\frac{1}{4}$ in. thick, the former being 1 in. diam., and the latter $\frac{3}{4}$ in. A nail or screw is driven in the centre to fix them securely.

The Road Wheels

The large rollers are each made up from two 4 ins. diam. discs of $\frac{3}{8}$ in. thick wood with a ring of $\frac{1}{4}$ in. wood cut to the same diam. as the outside and $\frac{3}{8}$ in. wide. Glue on the face, as Fig. 3 shows.

The part cut away in this diagram is to show clearly the three pieces. Glue the pieces together and put under pressure until the glue has hardened. Now cut two discs to form hubs to the centres of



the wheels from $\frac{1}{4}$ in. wood 1 in. diam. Cut two washers also the same thickness and size but with only $\frac{1}{4}$ in. holes cut in the centres.

These latter are spacing washers and will be glued to the axle bar running through from side to side and upon which are fixed the rollers.

The washers will be kept $1/16$ in. away from the sides for the sake of allowing the wheels to run freely. As will be seen from Fig. 3, there is a flywheel which is spun round realistically by a smaller wheel which is attached to it and which is in contact with the rim of one of the large rollers.

The Flywheel

The flywheel is 3 ins. in diam. and $\frac{3}{8}$ in. thick. Through its centre there is a $3/16$ in. axle which passes through the two sides G and which is held by a small washer on the opposite end.

A thin wooden or card washer is also put on the flywheel axle between the flywheel itself and the main side, so as to give clearance for the wheel to spin round.

The Drive Wheel

The smaller wheel "X" is 1 in. diam. and $\frac{3}{8}$ in. thick, and it is so fixed upon the axle that it comes immediately over the inside half of the roller. The slotted holes in the sides G allow any little irregularities in the circumference of the wheels.

Thus the small wheel is always in contact with the larger one, and if strips of fine glasspaper are put round the rollers and another piece round the smaller wheel of the flywheel, there will be

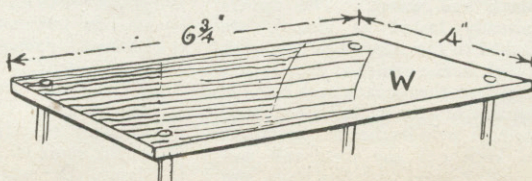


Fig. 4—The roof to the driver's compartment

sufficient "grip" to keep the flywheel always in motion while the engine is running either forwards or backwards.

The length of the axle for the large rollers is 5 $\frac{3}{4}$ ins.

The raised canopy over the driver is formed by a square of wood held by four pieces of 3/16in. dowelling. Fig. 4 shows the piece to size with the dowelling "let in" at the four corners. The lower ends of the dowelling are run into the sides "G" as shown in the sketch.

In painting up or enamelling the toy a few bright colours should be chosen. Green will do for the boiler and sides, with yellow bandings. The interiors of the large rollers and the ends of the front roller should be red, with red also for the canopy.

The remainder should be black picked out with yellow or white lines. The front roller could be covered with fine glasspaper the same as the larger rollers. Or, if preferred, it could be painted black.

Hobbies stock small tins of Crusoe enamel at 2 $\frac{1}{2}$ d. each which are quite suitable for the toy maker and which are very economical in use.

Satin walnut or beech should be used throughout for this splendid little toy, and Hobbies will be pleased to supply any reader with a quotation for a parcel of wood on hearing what variety is desired. Thin wood for bending is also supplied and round dowelling for the axles, etc.

ENAMEL CRAFT AT HOME

ALTHOUGH the making of enamelled jewellery and small ornamental articles by professional methods is rather beyond the scope of the home worker, it is possible to make most attractive imitations of Cloisonné enamel by the substitution of sealing wax for the harder substance used in the original.

This material can be obtained in a great variety of colours. It is inexpensive, and although its low melting point makes it inadvisable to use for objects exposed to local heat (such as ash-trays), its application in other forms is only limited by the ingenuity of the worker.

What to Make

Brooches are the easiest objects to make, and their design can convey the personal touch that adds so much to the value of a gift.

The one illustrated is simple and neat, the colour scheme being green and black. Materials and tools necessary for making it and similar articles are to be found in most home workers kits, but the list given here may prove helpful. Assuming the brooch is the one illustrated, the method of making it is as follows. First draw the design full size, making each line the same thickness as the wire.

Design in Wire

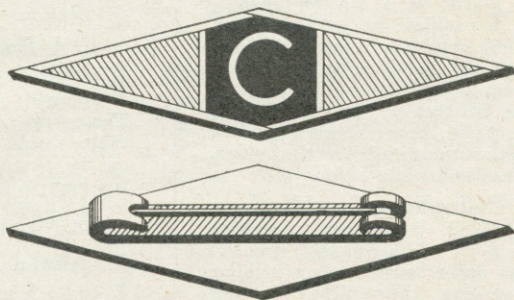
Transfer this on to the brass sheet, cut out, flatten, and true edges with a file. Cut four straight pieces of wire, lay one on top of the plate, level with the edge, and fix with a good

fillet of solder. Repeat with the other three wires, taking care that the joints fit closely.

A shallow tray is thus formed into which the two upright bars and initial letter are fitted and fixed. Clean up all edges, removing as much solder as possible, turn over, and fix pin (as these pins are gold plated it is advisable to tin them before soldering in position).

A good wash in warm water leaves the brooch ready for the wax which is first crushed and then piled in the proper recesses.

Holding the pin underneath with pliers, heat the brooch over a clear flame until the wax melts,



The front and back view of a simple brooch

adding more if required to fill all level. This should be done gently as it is easy to "boil" the wax. Bubbles so formed leave little pits on cooling. As these are sometimes unavoidable, however, the "pit" can be filled by placing a small piece of wax over the fault and applying hot wire.

When cool, a flat file lubricated with water, is used to rub down until all is level and the wire design evenly exposed. Fine carborundum paper follows the filing and, if obtainable, rouge paper gives an excellent finish.

Finally, see all surfaces are clean, wash with soap and water, and glaze with any good wax polish.

MATERIALS AND TOOLS

Several feet of 1/32in. round brass wire.

A sheet of 1/64in. brass.

Sealing wax in various colours.

Some "Men's soft collar pins."

Solder bit (preferably electric).

Tin snips or strong scissors.

Fine pointed pliers.

Wire cutters

Swiss files.

Medium cut flat file.

Small hammer.

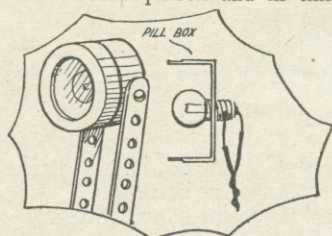
Tweezers.

HINTS & TIPS WORTH KNOWING

For original Tips published the sender will receive a Hobbies Handy Propelling Pencil. We cannot acknowledge all those received, or guarantee to print them. Send to The Editor, Hobbies Weekly, Dereham, Norfolk. Keep them short and add rough pencil sketches if possible.

A Small Spotlight

FOR those interested in puppet shows here is a simple, but useful, spotlight, which does not cost much. You will need a small round pillbox and in this



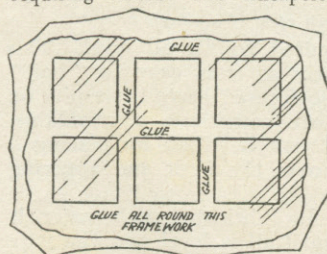
make a hole in the bottom for the bulb. When the bulb is in, solder the 2 wires leading to the battery. Two strips of Meccano can be screwed on one on each side of the box to make the holder movable. Out of the lid, cut a large hole and stick some cellophane inside.—(E. Roberts).

Paddles for Paddleboat

HERE is a tip for making paddles for a paddleboat. First obtain an engine of a toy motor-car and take off the wheels from the axle. Then take two cocoa tin bottoms and cut them with a hacksaw. Bore a hole in the centre of the tin and push the axle through. Then solder in position.

Cellophane for Windows

HERE is another suggestion for making suitable windows for doll's house or any building requiring them. The cheapest



and most realistic windows I know of, are those made as follows. Put glue round the frame inside, dampen a piece of cellophane and stick on. This will dry out tight and look just like glass.—(E.G.C.)

Home Made Knobs

IF you are making up the calendar "Holiday Visions" you will want a very small knob to fix on the "television set." All you need is a black cap from a tooth-paste tube. Get this and fill it up with cement or plastic-wood and set a small wood screw in the centre. When the cement or plastic wood has set hard, the knob is ready to screw in the calendar and as the caps on the tooth-paste tubes are octagonal, they look very effective just like a knob on a radio set. Also these small caps make nice feet on small boxes if filled in the same way.—(E. Baronius).

Fixing Pencil Drawings

THE best way to fix pencil drawings is to dissolve pale resin in spirits of wine. Lay the pencil drawing on its face upon a sheet of clean paper and brush the back of the drawing with the solution.—(G. Wellham).

A Bagatelle Tip

HERE is a tip, which I have found to be most effective. Those who possess a bagatelle table should put, elastic bands on the pins near the heads, and the balls will bounce about more, in a very exciting fashion.—(C. Platts).

Model Door Hinges

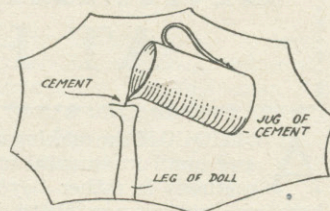
HERE is a simple tip on making hinges for small doors. Cut two strip pieces of strong paper or wide tape, and glue one half on each side of your door the complete length.—(W. Adams).

A Fishing Tip

HERE is a good way of mending fish hooks which have been detached from the gut. Bind the hook tightly on to the gut with fine silk and then melt a little candle wax or sealing wax on the silk to make it quite firm. Always carry a reel of silk in your fishing kit. This tip will be found a good remedy.—P. Le Fèvre.

Garden Ornaments

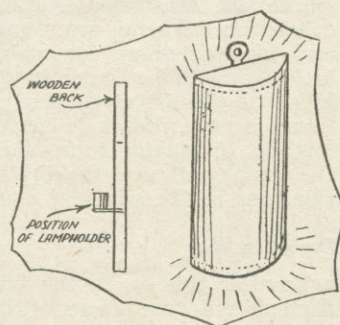
FIRST get some celluloid models from any toy shop, such as dwarfs. Then make some liquid cement in a creamy state and well sifted. Pour in a



jug and then after making a hole in the top of the figure, pour in cement. Leave to harden for a day or two and then break off the model and paint accordingly.—(D. J. Morgan).

Inexpensive Wall Light

ALL that is needed is one piece of deal 9ins. by 4ins. by 1/2 in. thick, one batten type lampholder and a piece of parchment (coloured) or a piece of Hobbies Ivorine 10ins. by 9ins. and a lamp. Cut a hole with a



fretsaw in the centre of the wood 2ins. square and on bottom edge screw the lampholder, cap upwards. Then nail parchment on one edge of board and bend over to other side. Place fancy beading over the nails to hide them and screw onto wall. The detail shows the article complete.—(C. L. Fowler).

FLAGS FOR MODEL SHIPS

HOW many otherwise excellent ship models are spoiled by the neglect of some small item? Something overlooked or ignored through the lack of detailed knowledge? And how many times are these items the flags or pennants?

Another point to be carefully noted is that flags should 'blow' or hang naturally. Also, not one blowing north, and another south.

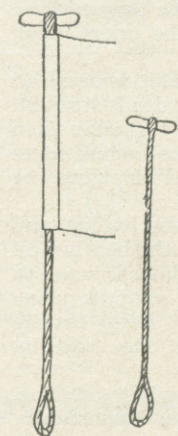
If we have made a model, say, of the clipper "Sovereign of the Seas," and have found particulars of the size and colours of the house flag of her owners, Grinnel Minturn & Co., the next thing is to make and colour the pennant.

For very small flags, up to 1 in. in length, thin sheet copper is the best material. This should be

cut to size and soldered to a pin. Or, if for a modern model, solder to a length of thin copper wire, which can be bent slightly away from the mast to give an appearance of straining, if the flag is blowing in the wind.

Painting Hints

When soldered, colour thinly with a flat oil paint. It is better to paint thinly, for if the copper shows faintly through the paint, it gives that suggestion of transparency and wear, found in real flags. When the paint is dry, the flag should be bent slightly to give the windblown 'ripple' effect of the original.



Flag mounted on hoist rope and the hoist itself

It is not practical to droop a copper flag realistically, and for this reason it should not be used on an anchored or becalmed vessel, unless on a flagpole lashed over the stern, when the flag can hang straight and lifeless. If this is done, a lifelike effect can be obtained by studying an original, and carefully folding.

Use Silk

For all flags larger than 1 in., it is necessary to use a woven material. Silk is easily the best for this. If the flag is the modern red or blue ensign, it is a good plan to buy red or blue silk of the required shade. This saves much work, and the other colours can be painted on. If the flag has no basic colour, use white silk, and paint on all the colours.

Cut a piece of material about twice as large as the required flag, and dip in fairly thin starch or alum. While still wet, stretch and pin tightly to a thick cardboard, or wooden, board, from which a centre panel has been cut somewhat larger than the required size of the flag. It is important that the silk should be pinned tightly

with pins placed $\frac{1}{2}$ in. or less, apart, otherwise it will crease.

When thoroughly dry, draw in the outline and design of the flag with a soft pencil. Turn over and trace on the reverse side. Do not forget to allow sufficient material at the hoist for turning over.

The flag may now be carefully painted with oil poster paint, watercolours, or waterproof inks. Paint on both sides of the flag.

For flags of under 2 ins. in length, hemming is impracticable, so when thoroughly dry, paint the edges of the flag with 'Durofix,' to a depth of $\frac{1}{16}$ in. inside the flag. Unpin and with a pair of very sharp scissors carefully cut out.

Another Method

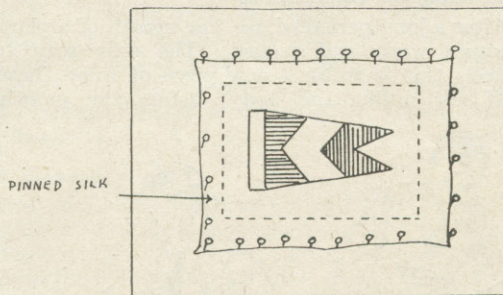
An alternative method which gives a similar result is as follows: When the paint has dried, unpin, and cut out the flag. Pass the side of a paint brush dipped in acetone varnish along the edge of the flag. Both methods will prevent any fraying of the edges.

If the flag is large enough for hemming, this should be done carefully before painting, and the flag then pinned and treated as above. In this case it will not be possible to use the cut-out board, as there will be no waste silk to stretch over the hole.

The Hoist Rope

When one side is painted, this should be thoroughly dried, turned over, pinned, and painted on the reverse.

The hoist rope should be made as in the diagram.



A flag mounted on board before cutting and setting

A small toggle of wood or bone is spliced into the rope at the head, and a small loop made at the bottom, large enough to take the toggle of another flag if required. The spare material at the hoist of the flag is now doubled round the hoist rope, and stitched neatly, or stuck down with Durofix.

When the flag is painted, and fastened to the hoist rope, all that remains is the setting. If the flag is required to droop unstirred by wind, wet it all over and fix to a temporary mast. Pin the lower corner of the fly down to the mast, and allow the flag to hang in natural folds.

When dry, unpin the fly, and mount on the model, the slight starch remaining in the silk will keep it permanently in its natural drooping folds.

Use more starch originally, if the flag is required to look as if blowing in a fresh breeze. To shape, moisten it slightly and mould into a rippled shape on a board. A better plan is to fix it to a temporary mast, then place before an electric fan which will blow it out, and fix it very naturally.

Do not dampen the flag too much, or it will take too long to dry, and lose the starchiness necessary to hold it in a blown position. The

hoist rope should be stiffened with starch or weak seccotine.

Water colours can be used safely if the flag is only damped, for the soft pencil lines will prevent the colours running, but if the flag is to be wetted for drooping, waterproof inks are the most practical. They give a matt finish not possessed by paint, and impart a slightly faded appearance.

There is one more point to be carefully noted. If the model is of a square rigged ship under sail, study old prints and photos carefully, and note the behaviour of the flags. The eddies of wind off the sails often cause a flag to fly queerly.

THE PROPER CARE OF PLANES

ONE ancient habit despised by some woodworkers and still practised by others is the soaking of wooden planes in linseed oil so as to preserve the wood and make it more efficient. The oil keeps the timber succulent and prevents cracking, especially at the ends, and the worker has not to oil the planing surface at frequent intervals to lessen friction and shoulder work.

To oil the body, remove the cutter and wedge, then putty up the mouth, the cavity being filled to the brim with the oil. After a time, the oil should appear at the ends, and when this happens, the wood is well saturated and no further oiling is necessary.

Should the oil soak into the wood and not be seen at the ends, keep filling the cavity until it appears. The wedge, too, should be oiled. Treatment usually lasts over a week, so do not be impatient.

Remouthing and Straightening

After a long period of use, the mouth of a plane becomes worn and ragged. The only way to remedy this is to fit a new piece of wood (hard stuff not unlike the body) before the mouth.



Two ways of releasing the plane iron

This particular edge comes in for most of the wear and tear. The new piece of wood is about $\frac{1}{2}$ in. thick and usually takes the shape of a triangle or oblong. Some workers have the grain running across the body, while others have it going with the body, which seems the best.

Make the recess about $\frac{7}{16}$ in. deep so that a $\frac{1}{16}$ in. projects for levelling with the body surface. The mouth space should not be more than necessary, remember.

Of all wooden planes, the try plane is one that needs its planing surface to be dead straight. The nose and back ends wear away quicker than the centre due to straightening the hollow edges of wood in general. A periodical straightening of the face is necessary.

To do so, remove the cutter and wedge and clamp the plane face uppermost in the bench vice. To work correctly, an iron try plane is used to straighten the wood, but a finely-set jack plane (iron or otherwise) would serve. Keep testing the face surface with a straight edge and by looking down the wood.

If the sides of the body are slightly off true, that is to say, squareness, this is an opportunity to rectify matters, for the try plane is used mostly on the shooting-board in straightening light boards and making rub joints. If still slightly off true, the boards straightened in this way should be marked and glued in reverse to each other.

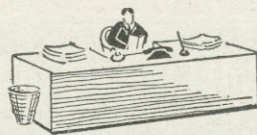
Shodding a Smoothing Plane

There comes a time in the life of a wooden smoothing plane when the face is heavily scratched and battered. Probably the grain at the nose is running up instead of down (this is a fault one should look out for when purchasing a new plane).

It is hardly worth planing the face side and possibly, as in the previous paragraph, the mouth is too wide. The usual procedure is to shod the plane with $\frac{1}{16}$ in. or $\frac{1}{8}$ in. mild steel (or iron) sheeting.

Get a piece cut the exact size at a sheet-metal worker's, then hack-saw and file it to the desired shape. Find the mouth space and cut same by drilling a series of holes in line, then clean out with a flat file. The metal plate is screwed to the straightened face of the plane with flathead screws. The plate makes your old plane as good as an iron one.

The EDITOR'S NOTES



ONE of the most realistic models we have published for a long time is the Hansom Cab illustrated on page 411 which can be made from the full size patterns on the centre pages of this issue. These cabs were the "taxi" of former days, and were quite "the thing" to use on special occasions and festivities. There are very few of them about, but one or two can be seen in the streets of London ambling along after the theatre or on odd occasions when some are not in the usual hurry. As suggested, the model forms a wonderful piece of work for exhibition purposes. The fretsaw, a few tools, and some amount of patience, are all that are necessary.

I EXPECTED as much! A few weeks ago I changed what is technically known as the "make-up" of the Weekly. These Notes formerly were on the opening page, with the Hints and Tips next. As soon as I altered the positions some very annoyed readers at once wrote in to ask "Why?" It is certainly very nice to find both these features so popular that many readers want them "early." At the same time the great majority have their main interest in the design of the week, and in view of their greater number I have put that feature first. The Hints and Tips, however, shall not be far away, but the Editor's Notes must fall in when they can. For after all, no matter how much I flatter myself, it is the instructive technical matter that you pay your 2d. for rather than the miscellaneous scribbles of my pen.

IT is pleasing to learn of the increased numbers who are joining the Hobbies League just now. There are continuous and numerous applications for the book which tells you all about it, and very few who read the book neglect to join. Membership now extends to almost every part of the world, and various Clubs of Hobbies enthusiasts have been formed. Then, of course, you see our periodical list of readers who want pen pals in the Correspondence Club lists from time to time, and this is one of the helpful privileges which Members enjoy. The entrance fee is only 6d. (1/- to readers overseas because of increased postages) and for this you have a splendid League Badge

in enamel and a handsome large Certificate when you have passed the simple entrance examination. If you want further particulars, do write for the interesting booklet on the Hobbies League. It is quite free, but you might just put a 1½d. stamp with your request, just to pay return postage.

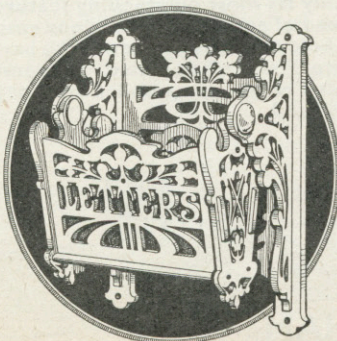
ONE common failing I must point out to those people making ship models. It is that the lines of the deck—the imitation planking—are usually much too far apart. You must remember that everything is in miniature. If you draw your lines about ¼ in. apart they would represent boards about 3ft. wide on the real thing. The planks need only be about ¼ in. or 3/16 in. wide, and represented by a faint hard pencil line drawn dead straight.

ANOTHER point noticed on ship models like the "Queen Mary" is that the port holes are usually much too large. On some of the models I have seen, they would be large enough for a motor car to drive through if in proportion on the real ship. These portholes should be carefully dotted in a line with a pencil first, and then the smallest blob of white paint put on to represent the circular opening. Have a steady hand and touch the model only with the tip of the brush to make a little "dot" for the desired porthole.

THOSE who do not follow our Chemistry articles are apt to scoff at their interest and useful application to everyday life. I don't think anyone really realises how much the chemist and his knowledge are responsible for matters of common interest, or how their experiments and findings affect us. As an example I read of a new test for telling whether drivers of motor cars in America are drunk or not. The fellow breathes into a balloon of known capacity and the captive breath released into a solution of sulphuric acid and potassium permanganate. The chemical combination causes the alcohol to bleach the permanganate and the degree of colour tells the amount of alcohol consumed.

This Novel Swing LETTER HOLDER

Design free next week.



MISCELLANEOUS ADVERTISEMENTS

The advertisements are inserted at the rate of 2d. per word prepaid. Name and address are counted, but initials or groups, such as E.P.S. or f/11/6 are accepted as one word. Postal Order and Stamps must accompany the order. They will be inserted in the earliest issue. To sell anything except fretwork goods or those shown in Hobbies Handbook. Orders can be sent either to Hobbies Weekly, Advertisement Dept. 30/32 Ludgate Hill, London, E.C.4, or Dereham, Norfolk.

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READ the "Stamp Collectors Fortnightly." Editor Fred J. Melville, for lively articles and latest news, 5/- annually or 2d. fortnightly from your newsagent. Specimen from "S.C.F." 44 Bedford Row, W.C.1.

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LONELY? Then write Secy., U.C.C., 16BB. Cambridge Street, London, S.W.1. Genuine. Established 1905.

FREE. New issue packet of 25, including set of 5 New Greece Classic issue of Nov., 1937, perforation gauge and watermark detector. Also, to every tenth boy applying, a Free Brit. Col., cat. 5/- in addition to the above. All you have to do is to send for my splendid ALL PICTORIAL approvals at 1/4d. and 1d. each. Every stamp a picture stamp.—Court, 76 Willowdale Road, Liverpool, 9.

STAMPS. 50 Free to approval customers.—Burley, 21 Jardine Road, Aston, Birmingham.

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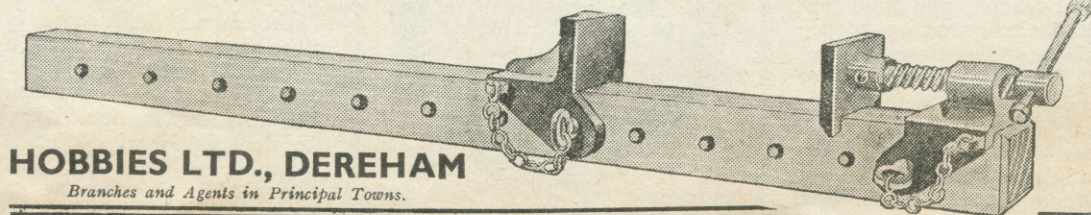
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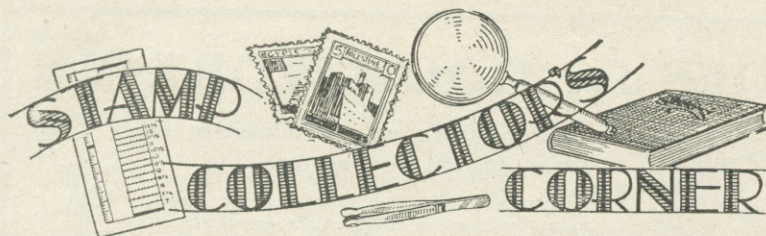
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NOTES FOR BEGINNERS

(Continued)

WE were talking in our last article of the number of duplicates you gradually acquire. Whilst this is unavoidable they are also very useful because you will find that you have duplicates of some stamps which your friends will want.

And they will also have duplicates of stamps which you want. Naturally this will lead to exchanging and the mere fact of meeting and exchanging stamps will teach you quite a lot and very probably you will pass on to them some information which they had not got.

It is very advisable to have something in which to keep these duplicates, a tin box carried in the pocket may do for a start but you will soon find that it is far from satisfactory—as numbers increase you will have to sort them out into good, fair and common.

For the good ones you need a book so they may be seen to the best advantage; this is called a duplicate book. It is not an album by any means; it is a book of perhaps twelve cardboard leaves and across these leaves there are transparent pockets. The stamps are slipped into these, no hinges are required, so that you can take out a stamp and show it to a friend as many times as you like without having to stick it into the album again. These cost from 2/6 upwards but they are well worth the outlay. Do not get too big a book, as pocket size is the best, and in fact small pocket size is what you want. A large pocket size soon gets the corners spoiled.

Large books containing twenty leaves with eight or more pockets per leaf are called stock books; they will hold thousands of stamps and are quite unnecessary. The better way of storing the cheaper duplicates is by means of transparent envelopes.

These may be bought at about tenpence per hundred, and they hold a number of stamps. Of course, the great thing about them is that one can see at a glance without having to open them,

what sort of stamps there are inside. You can have one envelope for the stamps from one country and another for the stamps from somewhere else, and so on.

Now that you have got together all the large articles that you are likely to require—or at least all that you will want for years to come—you must certainly get somewhere to keep everything. You cannot do much better than a large tin box—one of these toffee tins should fill the bill.

They are much better than cardboard, for if something drops on the latter it will surely dent, while if liquid is spilled then the contents are more likely to suffer than if they are in a tin.

The perforation gauge and the watermark detector are things which in time you will want, but do not worry about buying these yet. There are also other gadgets which are on the market—such as a chalk surface detector and a mount damper.

The latter may be nice for those who have a very delicate tongue, but it is hardly necessary even to the most fastidious in these days of tasteless mounts.

Now comes the question of a catalogue. This has been left until the last, but it is not the least important. Far from it. In fact you can hardly do without one, but it is better to have the album before you decide which you are going to get. The decision as to the album rested to a great extent on the number of stamps which you had, so that the catalogue does also.

There is, of course, the big catalogue of Stanley Gibbons, but you will not want that. In fact, as a beginner, you will do better not to get it—you would not be able to see the wood for the trees! The same firm have a catalogue especially designed or arranged for the beginner. It is called the 'Simplified' the cost is 5/- and as the name implies it only lists those stamps which you want listed.

That is, they have kept out the varieties of shade, watermark,

colour and perforation.

Messrs. Whitfield King & Co. have also issued a smaller catalogue like that of the big Gibbons, but it is a little bigger than the 'Simplified.'

The price is the same (5/-) but they include the major differences of watermark, so that they cater for the slightly more advanced as well. You will be quite safe with either of these excellent books.

So much for the material that you can have for the hobby. Now about some of the things which will help you to make a good collection.

The important thing is to start correctly, and here the best advice is to 'make haste slowly.' If you have a catalogue then study it before you put your stamps into the album.

That is to say, if you have say ten stamps of France to mount, before doing so turn to the pages devoted to France in the catalogue and see just when those that you have were issued.

You will then be able to mount these in the correct order. You will also be able to see how much space you must leave between each so the stamps you are likely to get will go into the spaces you have left. The catalogue will tell you if a stamp is very valuable, in which case you will not leave a space for it.

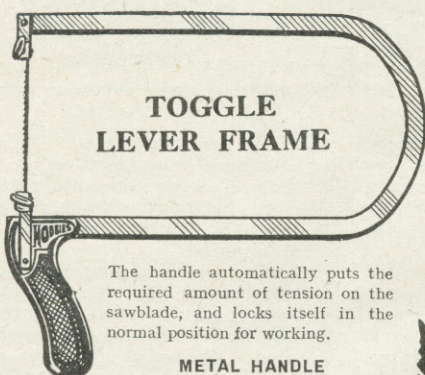
Of course, you must be guided in this space-leaving by the amount of room that the album gives for the country.

Perhaps an even better example of this would be Great Britain. Nothing looks worse than to see stamps bearing the portrait of Queen Victoria following the stamps bearing the portrait of say King Edward VII and these by King George VI, then a King Edward VIII. You see what is meant?

Of course, the arrangement of a collection does not depend on this alone, but there is no reason why you should make an elementary mistake like that.

(To be concluded)

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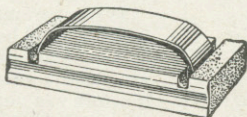
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The handle keeps the glass-paper strip taut.
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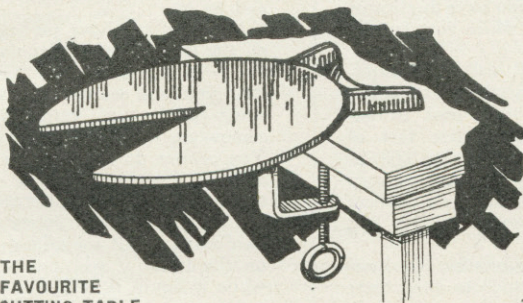
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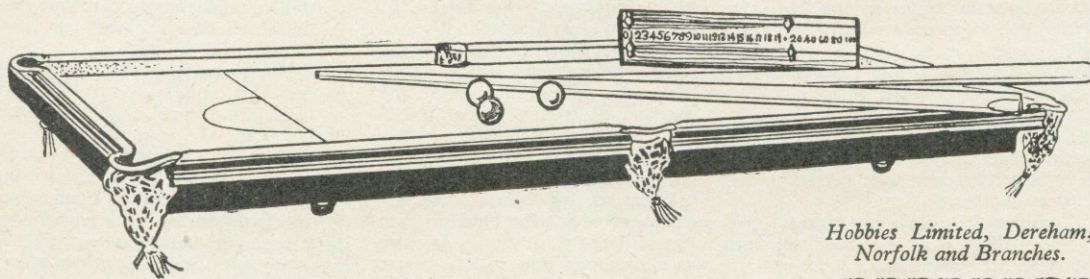
The "Boy's"
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Price 10d.

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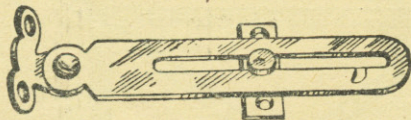
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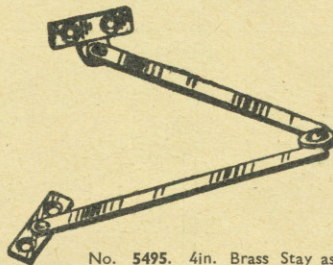
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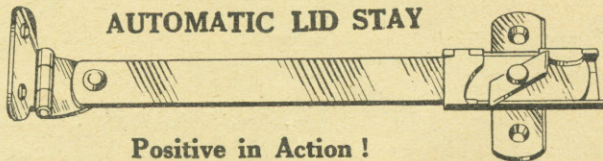


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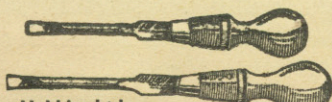
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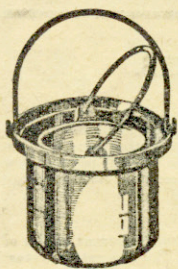


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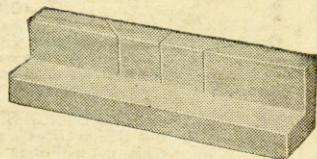
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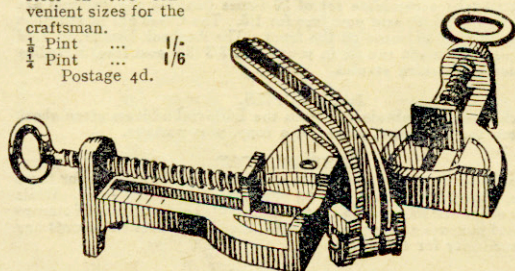
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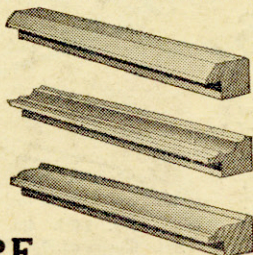
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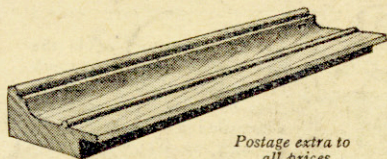
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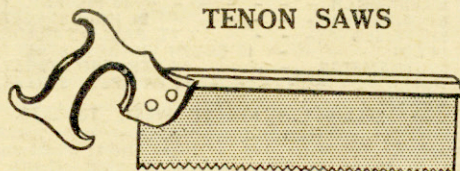


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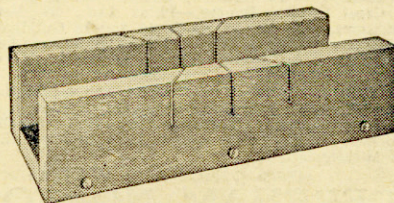
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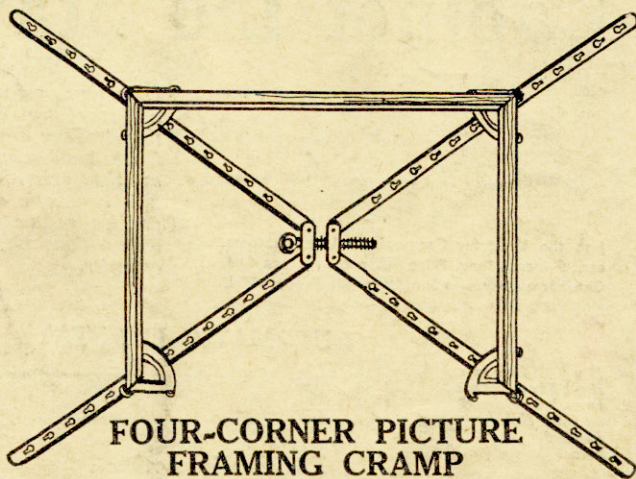
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